

IN THE CLAIMS

This listing of claims replaces all prior versions, and listings, in this application.

1. (currently amended) A biosensor for glucose ligand, which comprises a ~~bacterial periplasmic binding protein (bPBP) which is not glucose binding protein (GBP) or maltose binding protein,~~ and at least one reporter group attached at position 183 of said GBP, ~~one or more amino acid positions of said bPBP which is an allosteric or endosteric site;~~ wherein binding of glucose ~~said ligand in a ligand in a glucose-binding~~ pocket of said biosensor causes a change in signaling by said reporter group.

2. (currently amended) The biosensor according to claim 1, wherein said GBP is a W183C mutant bPBP ~~is selected from the group consisting of arabinose binding protein (ABP), ribose binding protein (RBP), dipeptide binding protein (DBP), glutamine binding protein (QBP), histidine binding protein (HBP), glutamate/aspartate binding protein (EBP), phosphate binding protein (PBP), sulfate binding protein (SBP), and Fe(III) binding protein (FeBP).~~

Claims 3-6 (canceled)

7. (currently amended) The biosensor according to claim 1, wherein said reporter group is covalently attached ~~at one or more amino acid positions of said bPBP.~~

8. (currently amended) The biosensor according to claim 1, wherein said reporter group is noncovalently attached ~~at one or more amino acid positions of said bPBP.~~

9. (original) The biosensor according to claim 1, wherein said reporter group is a redox cofactor.

10. (original) The biosensor according to claim 1, wherein said reporter group is a fluorophore.

11. (currently amended) The biosensor according to claim 1, wherein said biosensor's standard intensity change (ΔI_{std}) upon binding of glucose-~~ligand~~ is greater than 0.25.
12. (original) The biosensor according to claim 11, wherein said ΔI_{std} is greater than 0.9.
13. (currently amended) The biosensor according to claim 1, wherein said biosensor's maximum value of standard ratiometric change (ΔR_{max}) upon binding of glucose-~~ligand~~ is greater than 1.25.
14. (original) The biosensor according to claim 13, wherein said ΔR_{max} is greater than 2.5.
15. (currently amended) A biosensor for glucose-~~ligand~~, which comprises a glucose binding protein (GBP)-~~bacterial periplasmic binding protein (bPBP)~~ and at least one reporter group attached at one or more amino acid positions of said GBP selected from the group consisting of 10, 93 and 183 bPBP which is an endosteric site.
16. (withdrawn/currently amended) A method of detecting presence or absence of glucose-~~ligand~~ in a sample, which comprises: contacting a biosensor according to claim 1 with said sample under conditions such that said biosensor is able to bind to glucose-~~ligand~~ present in said sample; comparing the signal transduced by said reporter group when said biosensor is contacted with said sample with the signal(s) transduced by said reporter group when said biosensor is contacted with at least one control sample containing a known quantity of glucose-~~ligand~~; and determining the presence or absence of glucose-~~ligand~~ in said sample from said comparison.
17. (withdrawn/currently amended) A method of quantitating amount or concentration of glucose-~~ligand~~ in a sample, which comprises: contacting a biosensor according to claim 1 with said sample under conditions such that said biosensor is able to bind to glucose-~~ligand~~

~~ligand~~ present in said sample; comparing the signal transduced by said reporter group when said biosensor is contacted with said sample against signals transduced by a series of control samples containing known quantities of glucose~~ligand~~; and calculating the quantity of glucose~~ligand~~ in said sample from said comparison.

18. (withdrawn/currently amended) A method of assaying for glucose~~ligand~~ in a sample, which comprises:

- (a) contacting a biosensor according to claim 1 with said sample, wherein binding of said glucose~~ligand~~ in a glucose~~ligand~~-binding pocket of said biosensor causes a change in signaling by said reporter group;
- (b) measuring a ratiometric change (ΔR) for the signal transduced by said reporter group; and
- (c) at least detecting or quantitating glucose~~ligand~~ present in said sample.

19. (withdrawn) The method of claim 18, wherein said sample is comprised of a physiological fluid.

20. (withdrawn) The method of claim 19, wherein said physiological fluid is selected from the group consisting of blood, interstitial fluid, lavage, perspiration, plasma, saliva, serum, and urine.

Claims 21-23 (canceled)

24. (withdrawn/currently amended) A method of detecting presence or absence of glucose~~ligand~~ in a sample, which comprises: contacting a biosensor according to claim 15 with said sample under conditions such that said biosensor is able to bind to glucose~~ligand~~ present in said sample; comparing the signal transduced by said reporter group when said biosensor is contacted with said sample with the signal(s) transduced by said reporter group when said biosensor is contacted with at least one control sample

containing a known quantity of glucose-~~ligand~~; and determining the presence or absence of glucose-~~ligand~~ in said sample from said comparison.

25. (withdrawn/currently amended) A method of quantitating amount or concentration of glucose-~~ligand~~ in a sample, which comprises: contacting a biosensor according to claim 15 with said sample under conditions such that said biosensor is able to bind to glucose-~~ligand~~ present in said sample; comparing the signal transduced by said reporter group when said biosensor is contacted with said sample against signals transduced by a series of control samples containing known quantities of glucose-~~ligand~~; and calculating the quantity of glucose-~~ligand~~ in said sample from said comparison.

26. (withdrawn/currently amended) A method of assaying for glucose-~~ligand~~ in a sample, which comprises:

- (a) contacting a biosensor according to claim 15 with said sample, wherein binding of said glucose-~~ligand~~ in a glucose-~~ligand~~-binding pocket of said biosensor causes a change in signaling by said reporter group;
- (b) measuring a ratiometric change (ΔR) for the signal transduced by said reporter group; and
- (c) at least detecting or quantitating glucose-~~ligand~~ present in said sample.

27. (withdrawn) The method of claim 26, wherein said sample is comprised of a physiological fluid.

28. (withdrawn) The method of claim 27, wherein said physiological fluid is selected from the group consisting of blood, interstitial fluid, lavage, perspiration, plasma, saliva, serum, and urine.

Claims 29-30 (canceled)